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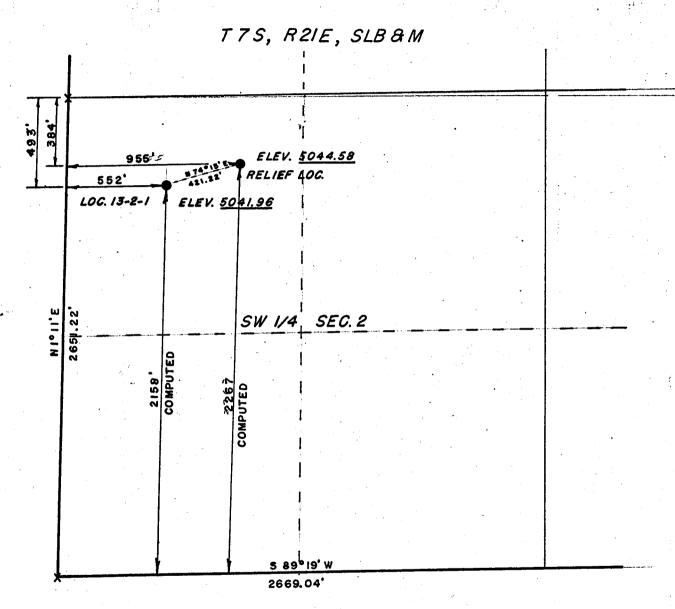
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Form approved. Budget Bureau No. 42-R1425.

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X = Corners Located (brass caps)

Scale: 1" = 5001

UINTAH ENGINEERING & LAND SURVEYING

P. O. Box 330 Vernal, Utah This is to certify that the above plat was prepared from field notes of actual surveys made by me or under my supervision and that the same are true and correct to the best of my knowledge and belief.

Registered Land Surveyor Utah Registration No. -2454

PARTY
Gene Stewart
LC. Kay
WEATHER Cold

Pacific Natural Gas Exploration Co. Well 13-2-1, and location of Relief Well, as shown in the NW1, SW2, Sec. 2, T7S, RZIE, SLEWM.

DATE Dec. 20, 196h
REFERENCES
G.L.O. Township plat
Approved 5/1/1964
Fille Pacific Note

#### Exhibit 1

#### PROPOSED DRILLING PROGRAM

#### FOR

### HORSESHOE BEND NO. 13-2-2 (Relief Well)

- 1. Build location 400' to 450' from Horseshoe Bend No. 13-2-1 location.
- 2. Move in, rig up and drill approximately 500' of 12-1/4" hole with gel and water.
- 3. Run and cement 500' of 8-5/8", 24#/foot, J-55, S.T.&C. casing with sufficient quantity of cement so that circulation will be obtained at surface (run 50 per cent excess cement).
- 4. W.O.C. 12 hours. Install B.O.P. and pressure test with 1500# for 15 minutes. After 24 hours total W.O.C. time, drill ahead with 7-7/8" bit using mud as a circulating medium.
- 5. The 7-7/8" hole will be deviated from approximately 1400' to approximately 3560' so that the ultimate chance of interception with the 13-2-1 hole will be achieved.
- 6. The mud will be kept at:

Depth 0 - 500'	Viscosity	Weight #/Gal.	W.L.	<u> Hq</u>
0 - 500'	70	N.C.	N.C.	N.C.
500'-1200'	40	9-9.4	10	9
1200'-2800'	40-45	9-9.4	6-8	9-9.5
2800'-T.D.	75-80	13-14	4-6	9-9.5

- 7. B.O.P.'s will be checked every 8 hours and the positive shutoff rams will be checked each trip out of the hole.
- 8. After communications are achieved between the two holes, 13-14# per gallon mud will be pumped into the relief hole until mud returns are established on the original hole.
- After the 13-2-1 well is killed with mud from the relief hole, 200 sacks of cement will be pumped into the well following the mud.
- 10. W.O.C. 8 hours and pressure up on plug. If circulation cannot be obtained from the relief hole through the original hole, it will be assumed that the plug is sufficient to contain the original hole until a re-entry can be initiated.
- 11. The entire success of this program depends on establishing communication with the Horseshoe Bend No. 13-2-1 well.
- 12. Assuming that the Horseshoe Bend No. 13-2-1 well is effectively controlled, the following program, designed to complete the captioned well as a gas well from ± 3560'-3570' will be undertaken at Operator's election.
- 13. Plug back with cement from T.D. to T.D. minus 200'.
- 14. Plug with cement from 1500'-1400'. Dress off plug suitably for running a whipstock.

## PROPOSED DRILLING PROGRAM CONT'D. HORSESHOE BEND NO. 13-2-2

- 15. Side track directional (relief) hole and drill 7-7/8" hole vertically to 3600'.
- 16. Run D.S.T. to test gas sand from  $\pm$  3560'-3570'.
- 17. Run IES and SGR-C logs.
- 18. If testing and logs are favorable, run and cement 4-1/2", 11.6#, J-55, S.T.& C. casing with 200 sacks of cement.
- 19. Perforate as appropriate, run 2-3/8", 4.7#, J-55, E.V.E. tubing and circulate out mud with water. Well should commence flowing as mud is being circulated out.
- 20. Blow well to clean up.

RDG/sgw 12-30-64

Verbal approval

Dec 18, 1964

#### PACIFIC NATURAL GAS EXPLORATION COMPANY

366 SOUTH FIFTH EAST STREET

SALT LAKE CITY, UTAH

P. O. BOX 2436 84110

January 5, 1965

Mr. P. W. Burchell Chief Petroleum Engineer The State of Utah Oil and Gas Conservation Commission 348 East South Temple Suite 301 Salt Lake City, Utah

> Re: Horseshoe Bend No. 13-2-2 Section 2, T 7S, R 21E Uintah County, Utah

Dear Mr. Burchell:

Enclosed is our application to drill the captioned well, together with the location plat and proposed drilling program. As you know, the well is being drilled as a relief hole for Well No. 13-2-1 which blew out and caught fire. The subject application and other material are being submitted at this time in accordance with our (Burchell - Geddes) verbal agreement.

After blowing out on 12-17-64 and catching fire on 12-18-64, the 13-2-1 well burned until 12-28-64. The hole apparently bridged over on that date and the gas flow ceased.

We propose to directionally drill the 13-2-2 well to a vertical depth of 3600' and bottom it approximately 420' South 74° 15' West from its surface location. This should cause it to be relatively near the bore hole of the 13-2-1 well through the interval 3560'-70' which is the approximate depth of the gas sand we believe to have blown out. We then intend to pump heavy mud into the 13-2-1 well to place it in suitable condition to be re-entered.

Provided the foregoing operation is successful, we then propose to plug back the 13-2-2 well and redrill it vertically to 3600', run casing and attempt to complete it in the interval 3560'-70'. This proposal is subject to approval from your office due to the unorthodox location for a gas well. However, we are requesting approval due to the unusual circumstances necessitating the drilling of the 13-2-2 well.

Mr. P. W. Burchell January 5, 1965 -2-8-5/8", 32#, J-55 surface casing has been cemented at 537' in 12-1/4" hole with 315 sacks, and we are presently drilling at a depth of 2058'. We will advise you well in advance of the time we expect to penetrate the objective gas sand. Very truly yours, Division Manager RDG/ehd Attachments cc: T. A. Johnson E. E. Loman

#### January 7, 1965

Pacific Natural Gas Exploration Company 366 South Fifth East Street Salt Lake City, Utah

Re: Motice of Intention to Drill Well Mo. HCRSESHOE BEND 13-2-2, 2267' FSL & 955' FWL, Sec. 2, T. 7 S., R. 21 E., Uintah County, Utah.

#### Gentlemen:

This letter is to confirm verbal approval granted by Paul W. Burchell on December 18, 1964, to drill the above mentioned relief well.

As soon as you have determined that it will be necessary to plug and abandon this well, you are hereby requested to immediately notify the following:

PAUL W. BURCHELL, Chief Petroleum Engineer Office: DA 8-5771, DA 8-5772 or DA 8-5773 Home: CR 7-2890 - Salt Lake City, Utah

Enclosed please find Form OGCC-8-X, which is to be completed if water sands (aquifers) are encountered while drilling, particularly assessable near surface water sands. Your cooperation with respect to completing this form will be greatly appreciated.

Please have the enclosed 'Minimum Safety Requirements' notice posted in a conspicuous place on the drilling location.

Very truly yours,

#### OIL & GAS CONSERVATION CONSISSION

#### CLEON B. FRIGHT EXECUTIVE DIRECTOR

#### CBF: sch

cc: Nam Gardner, Director, State Land Board, Salt Lake City, Utah

Harvey L. Coonts, Pet. Eng., Oil & Gas Conservation Commission, Meab, Whah

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Form 9-331 (May 1963)	UNITED STATES  MENT OF THE INTERI	SUBMIT IN PLICATE*  (Other instr s on re-	Budget Byreen No. 1474. LEASE DESIGNATION AND SERIAL NO.
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Use "APPLI	posals to drill or to deepen or plug b CATION FOR PERMIT—" for such pr	roposals.)	Not Applicable UNIT AGREEMENT NAME
OIL GAS WELL OTHER	Relief Well		None
2. NAME OF OPERATOR	-		Horseshoe Bend
Pacific Na 3. ADDRESS OF OPERATOR	tural Gas Exploratio	n Company 9.	WELL NO.
P. O. Box 2436.  1. LOCATION OF WELL (Report location See also space 17 below.)	Salt Lake City. Uta	State requirements.	13-2-2 FIELD AND POOL, OR WILDCAT
At surface		Re	elief Well - Wildcat
2267' FSL & 9			SURVEY OR AREA
Sec 2, T 7S, Uintah County	. Utah		ec 2. T 7S. R 21E
14. PERMIT NO.	15. ELEVATIONS (Snow whether Dr	, 111, 011, 600)	
	5044.58		
	• • •	Nature of Notice, Report, or Othe	
NOTICE OF INT			REPAIRING WELL
TEST WATER SHUT-OFF FRACTURE TREAT	PULL OR ALTER CASING MULTIPLE COMPLETE	WATER SHUT-OFF FRACTURE TREATMENT	ALTERING CASING
SHOOT OR ACIDIZE	ABANDON*	SHOOTING OR ACIDIZING	ABANDONMENT*
REPAIR WELL	CHANGE PLANS	(Other)(Note: Report results of r	nultiple completion on Well
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	t plug from 3692'-31		
2. Place cemen	t plug with 10% sand	l from 1500'-1400'	
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(This procedure later date, st in the Uintah	raightening the hole	of re-entering the we and completing as a	ll at some gas well
CO	PROVED BY UTAH OIL AND ONSERVATION COMMISSION TE: 1-26-65 by Chies		el el
18. I hereby certify that the foregoin	g is true and correct		7 05 05
signed B. H. Means	HATT GAR PHYLE	Completion Engineer	DATE 1-25-65
(This space for Federal or State	office use)		
APPROVED BY	F ANY:		DATE

\*See Instructions on Reverse Side

#### PACIFIC NATURAL GAS EXPLORATION COMPANY

#### COMPLETION REPORT

Well:

Horseshoe Bend No. 13-2-2

Location:

2267' FSL & 955' FWL Section 2, T 7S, R 21E Uintah County, Utah

Area:

Horseshoe Bend

Elevation:

5044.58' Ground

Spud Date:

December 23, 1964

Completion Date:

February 15, 1965

Total Depth:

36921

Objective:

Gas sand at approximately 3600'

Results:

Reached total depth in gas sand and successfully pumped mud into formation to control blowout of No. 13-2-1 well.

Contractors:

Barker Well Service, Grand Junction, Colorado

Rocky Mountain Geo-Engineering, Grand Junction, Colorado

Geologic Tops:

None picked

#### SUMMARY

No geological interpretation or sample description is included in this report as the well was drilled strictly as a mechanical means of controlling the blowout which occurred in the No. 13-2-1 well.

#### CHRONOLOGICAL LOG

## HORSESHOE BEND NO. 13-2-2 (Relief Hole)

- 12-21-64 Barker Drilling Company rigging up a relief hole approximately 415' from Horseshoe Bend No. 13-2-1. Should spud before noon today.
- 12-22-64 Picking up kelly to drill rat hole.
- 12-23-64 Drilling at 145'. Bit #1 (DT) 12-1/4". Dev: 0° @ 120'. Mud: weight 9.1#, viscosity 45.
- 12-24-64 Drilling at 457'. Bit #1 (DT 12-1/4") in hole. Mud: weight 9.2#, viscosity 46. Dev: 1/2° @ 172'; 1/4° @ 232'; 1° @ 292'; 3/4° @ 381'.
- 12-25-64 Drilling at 540', 12-1/4" hole. Ran 523.82' of 8-5/8" O.D. (16 joints), 32#/foot, J-55 casing with guide shoe at 1.02', total 524.84'. Set at 536.82' K.B. Cemented with 315 sacks regular with 30% CaCl2. Plug down at 10:15 p.m. Good cement returns. Centralizers at 520', 461.91', 396.57', 329.12', 262.88', and 196.57'.
- 12-26-64 W.O.C. Nippling up. Pressured up to 1250# for 30 minutes. Okay.
- 12-27-64 840', drilling.
- 12-28-64 Drilling at 1195'. Bit #3 (OSC-3) made 411' in 19-3/4 hours. Bit #4 (DT) in hole. Dev: 3/4° @ 831', 1/2° @ 962', 1/2° @ 1082'. Mud: weight 9.7#, viscosity 45.
- 12-29-64 Drilling at 1412', pulling whipstock. Set whipstock at 1400'.

  Drilling 12' off tool with 5-5/8" bit. Will pick up reamer and enlarge hole to 7-7/8". Bit #5 (YT3 7-7/8") made 55' in 3-3/4 hours. Bit #6 (OWC 5-5/8") made 12' in 2-1/4 hours. Mud: weight 9.6#, viscosity 53. Deviation and direction:

1202' 1/4° N 63W 1321' 1/2° N 35E 1400' 3/4° N 79E 2.41' N 1.23 E 3.26' N 1.82'E 3.26' N 2.82' E

1400' -3.75' true vertical depth at 1400'. Horseshoe Bend well has been dead 25 hours. Died at 8:00 a.m. 12-28-64.

12-30-64 - Drilling at 1472'. Making trip in with long monel collar with near bit reamer to try and stop angle and still change course.

Correction - Bit #6 is a Reed YT3. Mud: weight 9.8#, viscosity 50. Dev: 3/4° N 79E 1400'; 2-3/4° S 39W 1440', 1472' 4-1/2° S 45W.

1411' 1-3/4° 1410.94' True Vertical -3.49 Vertical Section S 33W 2.97'N 2.63'E

1440' 2-3/4° 1439.91' True Vertical -2.34 Vertical Section S 39W 1.89'N 1.75'E

1472' 4-1/2° 1471.81' True Vertical - .12 Vertical Section S 45W .12'N .02'W

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12-31-64 - 1540', Depth. Failed to kick off last night. Presently going in hole to drill approximately 7' of new hole and attempt to kick off again. Dev: 5-1/4° @ 1532' S 42W.
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1-1-65 - Drilling at 1597'.

1-2-65 - Drilling at 1641'.

1-3-65 - Tripping at 1697'. Dev:

1665' 9-3/4° S 70W (8:00 a.m.) 1694' 10-3/4° S 72W " " 1725' 11° S 75W (4:30 p.m.) 1784' 11-1/2° S 76W " "

1-4-65 - Tripping for new bit at 2058'. Bit #7 (DT) made 264' in 8-1/2 hours. Mud: weight 10.3#, viscosity 58, water loss 4, 2/32" cake. Dev:

1813' 11-3/4° S 75W 1873' 12-1/4° S 75W 1934' 13° S 75W

1994' 13-3/4° S 77W

- 1-5-65 T.D. 2071'. Drill collars stuck at 1585'. Will attempt to back off at 1575'. Spotted 25 barrels of oil; no results. Presently backing off with McCullough. Mud: weight 9.1#, viscosity 65, water loss 4, pH 10.5, 12% oil.
  - 1-6-65 2180', drilling. Dev: 14-1/2° @ 2132' S 80W. Mud: weight 9.6#, viscosity 65, water loss r, 2/32" cake, pH 10, 1-1/2% sand, 16% oil. Backed stuck drill collars off at 1555'. Ran bumper jars and oil jars. Bumped fish down 2'; recovered fish.
- 1-7-65 2439', on trip for new bit. Bit #9 (OSC1G) made 210' in 8-3/4 hours. Bit #10 (OSC1G) made 171' in 10-1/4 hours. Mud: weight 9.7#, viscosity 54, water loss 2, 2/32" cake, pH 10, 18% oil. Lost approximately 35 barrels mud at 2360'. Dev:

15-1/4° @ 2190' S 80W 15-1/4° @ 2250' S 82W 15-1/4° @ 2308' S 83W 15-1/2° @ 2338' S 83W 15-3/4° @ 2409' S 83W 15-3/4° @ 2439' S 84W

- 1-8-65 Tripping at 2482'. Set tool at 2470'. Decreased angle 1' and direction 9°. Looks like good run. Dev: 16° @ 2469 S 85W, 15° @ 2481' S 76W. Mud: weight 9.9#, viscosity 78, water loss 2.4, 2/32" cake, pH 10, 15% oil.
- 1-9-65 Drilling at 2538'.
- 1-10-65 Drilling at 2736'.
- 1-11-65 2872', drilling. Bit #13 (Rerun BT2G) made 105' in 4 hours (2481'-2474'). Bit #14 (YT1A) made 162' in 7-1/4 hours (2474'-2736'). Bit #15 (YT3) made 99' in 7-1/4 hours (2736'-2835'). Bit #16 (YT1A) went in hole at 2835'.

1-11-65 (Con't)	-	<u>Depth</u>	<u>Drift</u>	Vert. Depth	Section	Drift Direction	Coordi South	nates <u>West</u>
•		2502' 2538' 2562' 2637' 2736' 2761' 2810'	15° 14-3/4° 15° 16° 16-1/2° 16° 15-3/4°	2475.30 2510.11 2533.29 2605.38 2700.30 2724.33 2771.49	220.94 230.10 236.29 256.88 284.89 291.75 304.98	S 73 W S 70 W S 68 W S 68 W S 68 W S 67 W S 67W	49.64 52.78 55.11 62.85 73.39 76.08 81.28	215.02 223.64 229.39 248.55 274.62 280.96 293.21

1-12-65 - Drilling at 3012'. Bit #16 (YT1A) drilled from 2835'-2921' (86') in 9-3/4 hours. Bit #17 (YS1) has drilled from 2921'-3012' (91') in 8 hours. Mud: weight 9.5#, viscosity 51, water loss 2.8, 2/32" cake, ph 8, 3/4% sand, 5% oil. Mud logging unit put into operation at 2921'.

<u>Depth</u>	Drift Vert. Depth	Section	Direction	South	West
2873' 2919' 2967'	15° 2832.34 14-1/4° 2876.92 13-1/4° 2923.64	321.23 332.51 343.46	S 68 W	87.39 91.63	West 308.33 318.83 329.03

1-13-65 - 3172', making trip. Bit #17 (YS1) drilled 132'. Bit #18 (OSC1G) drilled 119' in 12 hours. Mud: weight 9.6#, viscosity 69, water loss 4, 2/32" cake, pH 9.8, 1/2% sand, 9% oil.

Depth	Drift	Vert Depth	Section	Direction	Count	
3026'	12-1/40	2981.30	355.91			<u>West</u>
	11-1/4 <sup>0</sup> 10-1/2 <sup>0</sup>	3039.17	367.39	S 67 W S 69 W	100.62 104.74	340.55 351.30
	10 1/2	3099.15	378.48	S 69 W	108.73	361.68

1-14-65 - 3334', on bottom with new bit (#20). Bit #19 (DT2G) drilled from 3172'-3334' (162') in 13-1/4 hours. Mud: weight 9.9#, viscosity 61, water loss 3.5, 2/32" cake, 1% sand, 5% oil.

Depth	Drift	Vert Depth	Section	Direction	South	West
3175' 3236' 3334'	10° 9° 7-1/4°	3127.71 3187.96 3285.18	383.51 393.03 405.33	S 70 W	110.45 113.87 118.70	366.42

1-15-65 - Depth 3404'. Awaiting parts to repair burned out clutch on pump.

Depth Drift Vert Depth Section Direction South West

3404' 6-1/2° 3354.73 413.15 S 64 W 122.17 393.84

1-18-65 - Depth 3692'. Lost 75 barrels mud at 3690'-3692'. Mud: weight 9.9#, viscosity 80, water loss 3, 2/32" cake, pH 10.5, 1-1/2% sand, 4% oil. Bit #24 (WT18) made 59' in 8-1/4 hours (3593'-3652'). Bit #25 (OSCIG) made 40' in 6 hours (3652'-3692').

 Depth
 Drift
 Direction
 South
 West

 3646'
 5-1/2°
 S 65 W
 132.86'
 415.65'

 3692'
 5°
 S 72 W
 134.10'
 419.46'

1-19-65 - Depth 3692'. Ran I.E.S. and Sonic-Caliper logs. Conditioned hole.
Ran Halliburton DM squeeze packer on 2-7/8", 6.5#, N-80, EUE tubing and set at 3399'. Pumped in 25 barrels of mud. Break down pressure 700#, pumping pressure 400#.

- 1-20-65 Rig on standby with two man crew. All pits full of mud.
- 1-21 thru
- 2-11-65 Rig standing by.
- 2-12-65 Pumped in 10 barrels of mud to determine if formation is still taking fluid. Break down pressure 1000#, average pumping pressure 500#.
- 2-15-65 Plugged well as follows:
  - 15 sacks pumped below bridge plug at 3400'
  - 5 sacks regular on top of bridge plug
  - 35 sacks regular with 5 sacks sand at 1385'-1500'
  - 35 sacks regular from 586'-486', 1/2 in surface and 1/2 below surface pipe

Presently stripping cellar. Will release Barker rig and install surface marker when cellar is stripped.

2-16-65 - Placed 5 sack cement plug at surface and installed dry hole marker.

Rig released at 2:00 p.m. 2-15-65. Well has been abandoned in such a condition so as to allow for re-entry and re-drilling to Uinta gas sand. FINAL REPORT

## VERTICAL TESTS HORSESHOE BEND NO. 13-2-2

<u>Depth</u>		Degree Deviation
120'	•	0
172 <b>'</b>		1/2
232'		1/4
292'		1
381 <b>'</b>		3/4
831'		3/4
962'	•	1/2
1082'		1/2
1202'		1/4 N 63 W
1321'		1/2 N 35 E
1400'		3/4 N 79 E
1411'	•	1-3/4
1440'		2-3/4 s 39 w
1472'		4-1/2 S 45 W
1532'		5-1/4 S 42 W
1665'		9-3/4 S 70 W
1694!		10-3/4 S 72 W
1725'		11 S 75 W
1784'		11-1/2 S 76 W
1813'		11-3/4 S 75 W
1873 <b>'</b>		12-1/4 S 75 W
1934'		13 S 75 W
1994'		13-3/4 S 77 W
2132'		14-1/2 S 80 W
2190'		15-1/4 S 80 W
2250'		15-1/4 S 82 W
2308'		15-1/4 S 83 W
2338		15-1/2 S 83 W
2409 <b>'</b>	· ·	15-3/4 S 83 W
2439 <b>'</b>		15-3/4 S 84 W
2469'		16 S 85 W
2481 <b>'</b>		15 S 76 W
2502 <b>'</b>		15 S 73 W
2538 <b>'</b>		14-3/4 S 70 W
2562'		15 S 68 W
2637 <b>'</b>		16 S 68 W
2736'		16-1/2 S 68 W
2761 <b>'</b>		16 S 67 W
2810 <b>'</b>	•	15-3/4 S 67 W
2873'		15 S 68 W
2919 <b>'</b>		14-1/4 S 68 W
2967'		13-1/4 S 68 W
3026'		12-1/4 S 67 W
3085'		11-1/4 S 69 W
3146'		10-1/2 S 69 W
3175'		10 s 70 W
3236		9 S 69 W
33341		7-1/4 S 67 W
3404'		6-1/2 S 64 W

Depth 3646' 3692'

#### Degree Deviation

5-1/2 S 65 W 5 S 72 W

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## Schematic Illustration of Drilling Progress HORSESHOE BEND NO. 13-2-2

5~sacks cement at surface & dry hole marker installed

 $8\text{-}5/8\text{''},\ 32\#,\ \text{J-}55$  casing set at 536.82' K.B. Cemented with 315 sacks regular cement with 3% CaCl<sub>2</sub>

35 sacks cement 486'-586'

Set whipstock at 1400'

0 0 0 0

35 sacks cement with 5 sacks sand from 1385'-1500'

5 sacks cement in top of plug D.M. bridge plug at 3399' 15 sacks cement below plug

T.D. 3692' KB

Form 9-331 (May 1963)

16.

NITED STATES

SUBMIT IN TRICCATE\*

Other instructions on reverse side)

GEOLOGICAL SURVEY

Porm approved.
Budget Bureau No. 42-R1424.

5. LEASE DESIGNATION AND SERIAL NO.

6. IF INDIAN, ALLOTTEE OR TRIBE NAME

VACIALIS	NOTICES	AND	<b>REPORTS</b>	ON	WELLS
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(Do not use this form for proposals to drill or to deepen or plug back to a different reservoir.

Use "APPLICATION FOR PERMIT—" for such proposals.) Not Applicable 7. UNIT AGREEMENT NAME OTHER None Relief Well 8. FARM OR LEASE NAME 2. NAME OF OPERATOR Pacific Natural Gas Exploration Company
ADDRESS OF OPERATOR Horseshoe Bend P. O. Box 2436, Salt Lake City, Utah 84110 13-2-2 LOCATION OF WELL (Report location clearly and in accordance with any State requirements.\* See also space 17 below.)
At surface 10. FIELD AND POOL, OR WILDCAT Relief Well - Wildcat C., T., R., M., OR BLK. AND SURVEY OR AREA 2267' FSL & 955' FWL Sec 2, T 7S, R 21E, SLB-M Uintah County, Utah
| 15. ELEVATIONS (Show whether DF, RT, GR, etc.) Sec 2, T 7S, R 21E
12. COUNTY OR PARISH | 13. STATE 14. PERMIT NO. Utah 5044.58 Uintah

Check Appropriate Box To Indicate Nature of Notice, Report, or Other Data

NOTICE OF	INTENTION TO:	SUBSEQUENT REPORT OF:
TEST WATER SHUT-OFF	PULL OR ALTER CASING	WATER SHUT-OFF REPAIRING WELL
FRACTURE TREAT	MULTIPLE COMPLETE	FRACTURE TREATMENT ALTERING CASING
SHOOT OR ACIDIZE	ABANDON*	SHOOTING OR ACIDIZING ABANDONMENT* X
REPAIR WELL	CHANGE PLANS	(Other)
(Other)	<u> </u>	(Note: Report results of multiple completion on Well Completion or Recompletion Report and Log form.)

17. DESCRIBE PROPOSED OR COMPLETED OPERATIONS (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work. If well is directionally drilled, give subsurface locations and measured and true vertical depths for all markers and zones pertinent to this work.)\*

Plugged and abandoned 2-15-65 as follows:

- 1. 15 sacks regular cement pumped below bridge plug set at 3400'
- 2. 5 sacks regular cement spotted on top of bridge plug.
- 3. 35 sacks regular cement with 5 sacks sand from 1500'-1385'.
- 4. 35 sacks regular cement from 586'-486', 1/2 in surface and 1/2 below surface pipe.
- 5. 5 sacks regular cement at surface with dry hole marker installed.

(This procedure is in anticipation of re-entering the well at some later date, straightening the hole and completing as a gas well in the Uintah sand.)

8. I hereby certify that the foregoing is true and correct		
SIGNED B. H. Means 3. 99. Means	TITLECompletion Engineer	DATE2-17-65
(This space for Federal or State office use)		
APPROVED BYCONDITIONS OF APPROVAL, IF ANY:	TITLE	_ DATE

\*See Instructions on Reverse Side

pale



#### PACIFIC NATURAL GAS EXPLORATION COMPANY

#### COMPLETION REPORT

Well:

Horseshoe Bend No. 13-2-2

Location:

2267' FSL & 955' FWL Section 2, T 7S, R 21E Uintah County, Utah

Area:

Horseshoe Bend

Elevation:

5044.58' Ground

Spud Date:

December 23, 1964

Completion Date:

February 15, 1965

Total Depth:

36921

Objective:

Gas sand at approximately 3600'

Results:

Reached total depth in gas sand and successfully pumped mud into formation to control blowout of No. 13-2-1 well.

Contractors:

Barker Well Service, Grand Junction, Colorado

Rocky Mountain Geo-Engineering, Grand Junction, Colorado

Geologic Tops:

None picked

#### SUMMARY

No geological interpretation or sample description is included in this report as the well was drilled strictly as a mechanical means of controlling the blowout which occurred in the No. 13-2-1 well.

#### CHRONOLOGICAL LOG

## HORSESHOE BEND NO. 13-2-2 (Relief Hole)

- 12-21-64 Barker Drilling Company rigging up a relief hole approximately 415' from Horseshoe Bend No. 13-2-1. Should spud before noon today.
- 12-22-64 Picking up kelly to drill rat hole.
- 12-23-64 Drilling at 145'. Bit #1 (DT) 12-1/4". Dev: 0° @ 120'. Mud: weight 9.1#, viscosity 45.
- 12-24-64 Drilling at 457'. Bit #1 (DT 12-1/4") in hole. Mud: weight 9.2#, viscosity 46. Dev: 1/2° @ 172'; 1/4° @ 232'; 1° @ 292'; 3/4° @ 381'.
- 12-25-64 Drilling at 540', 12-1/4" hole. Ran 523.82' of 8-5/8" O.D. (16 joints), 32#/foot, J-55 casing with guide shoe at 1.02', total 524.84'. Set at 536.82' K.B. Cemented with 315 sacks regular with 30% CaCl2. Plug down at 10:15 p.m. Good cement returns. Centralizers at 520', 461.91', 396.57', 329.12', 262.88', and 196.57'.
- 12-26-64 W.O.C. Nippling up. Pressured up to 1250# for 30 minutes. Okay.
- 12-27-64 840', drilling.
- 12-28-64 Drilling at 1195'. Bit #3 (OSC-3) made 411' in 19-3/4 hours. Bit #4 (DT) in hole. Dev: 3/4° @ 831', 1/2° @ 962', 1/2° @ 1082'. Mud: weight 9.7#, viscosity 45.
- 12-29-64 Drilling at 1412', pulling whipstock. Set whipstock at 1400'.

  Drilling 12' off tool with 5-5/8" bit. Will pick up reamer and enlarge hole to 7-7/8". Bit #5 (YT3 7-7/8") made 55' in 3-3/4 hours. Bit #6 (OWC 5-5/8") made 12' in 2-1/4 hours. Mud: weight 9.6#, viscosity 53. Deviation and direction:

1202' 1/4° N 63W 1321' 1/2° N 35E 1400' 3/4° N 79E 2.41' N 1.23 E 3.26' N 1.82'E 3.26' N 2.82' E

1400' -3.75' true vertical depth at 1400'. Horseshoe Bend well has been dead 25 hours. Died at 8:00 a.m. 12-28-64.

12-30-64 - Drilling at 1472'. Making trip in with long monel collar with near bit reamer to try and stop angle and still change course.

Correction - Bit #6 is a Reed YT3. Mud: weight 9.8#, viscosity 50. Dev: 3/4° N 79E 1400'; 2-3/4° S 39W 1440', 1472' 4-1/2° S 45W.

1411' 1-3/4° 1410.94' True Vertical -3.49 Vertical Section S 33W 2.97'N 2.63'E

1440' 2-3/4° 1439.91' True Vertical -2.34 Vertical Section S 39W 1.89'N 1.75'E

1472' 4-1/2° 1471.81' True Vertical - .12 Vertical Section S 45W .12'N .02'W

12-31-64 - 1540', Depth. Failed to kick off last night. Presently going in hole to drill approximately 7' of new hole and attempt to kick off again. Dev: 5-1/4° @ 1532' S 42W.

1-1-65 - Drilling at 1597'.

1-2-65 - Drilling at 1641'.

1-3-65 - Tripping at 1697'. Dev:

1665' 9-3/4° S 70W (8:00 a.m.) 1694' 10-3/4° S 72W " " 1725' 11° S 75W (4:30 p.m.) 1784' 11-1/2° S 76W " "

1-4-65 - Tripping for new bit at 2058'. Bit #7 (DT) made 264' in 8-1/2 hours. Mud: weight 10.3#, viscosity 58, water loss 4, 2/32" cake. Dev:

1813' 11-3/4° S 75W 1873' 12-1/4° S 75W 1934' 13° S 75W 1994' 13-3/4° S 77W

- 1-5-65 T.D. 2071'. Drill collars stuck at 1585'. Will attempt to back off at 1575'. Spotted 25 barrels of oil; no results. Presently backing off with McCullough. Mud: weight 9.1#, viscosity 65, water loss 4, pH 10.5, 12% oil.
- 1-6-65 2180', drilling. Dev: 14-1/2° @ 2132' S 80W. Mud: weight 9.6#, viscosity 65, water loss r, 2/32" cake, pH 10, 1-1/2% sand, 16% oil. Backed stuck drill collars off at 1555'. Ran bumper jars and oil jars. Bumped fish down 2'; recovered fish.
- 1-7-65 2439', on trip for new bit. Bit #9 (OSC1G) made 210' in 8-3/4 hours. Bit #10 (OSC1G) made 171' in 10-1/4 hours. Mud: weight 9.7#, viscosity 54, water loss 2, 2/32" cake, pH 10, 18% oil. Lost approximately 35 barrels mud at 2360'. Dev:

15-1/4° @ 2190' S 80W 15-1/4° @ 2250' S 82W 15-1/4° @ 2308' S 83W 15-1/2° @ 2338' S 83W 15-3/4° @ 2409' S 83W 15-3/4° @ 2439' S 84W

- 1-8-65 Tripping at 2482'. Set tool at 2470'. Decreased angle 1' and direction 9°. Looks like good run. Dev: 16° @ 2469 S 85W, 15° @ 2481' S 76W. Mud: weight 9.9#, viscosity 78, water loss 2.4, 2/32" cake, pH 10, 15% oil.
- 1-9-65 Drilling at 2538'.
- 1-10-65 Drilling at 2736'.
- 1-11-65 2872', drilling. Bit #13 (Rerun BT2G) made 105' in 4 hours (2481'-2474'). Bit #14 (YT1A) made 162' in 7-1/4 hours (2474'-2736'). Bit #15 (YT3) made 99' in 7-1/4 hours (2736'-2835'). Bit #16 (YT1A) went in hole at 2835'.

1-11-65 (Con't)	-	<u>Depth</u>	<u>Drift</u> <u>V</u>	Vert. Depth	Section	Drift Direction	Coordí South	nates <u>West</u>
		2502' 2538' 2562' 2637' 2736' 2761' 2810'	15° 14-3/4° 15° 16° 16-1/2° 16° 15-3/4°	2475.30 2510.11 2533.29 2605.38 2700.30 2724.33 2771.49	220.94 230.10 236.29 256.88 284.89 291.75 304.98	S 73 W S 70 W S 68 W S 68 W S 68 W S 67 W S 67W	49.64 52.78 55.11 62.85 73.39 76.08 81.28	215.02 223.64 229.39 248.55 274.62 280.96 293.21

1-12-65 - Drilling at 3012'. Bit #16 (YTlA) drilled from 2835'-2921' (86') in 9-3/4 hours. Bit #17 (YSl) has drilled from 2921'-3012' (91') in 8 hours. Mud: weight 9.5#, viscosity 51, water loss 2.8, 2/32" cake, pH 8, 3/4% sand, 5% oil. Mud logging unit put into operation at 2921'.

<u>Depth</u>	<u>Drift</u> <u>Vert. Depth</u>	Section	Direction	South	West
2873' 2919' 2967'	15° 2832.34 14-1/4° 2876.92 13-1/4° 2923.64	321.23 332.51 343.46	S 68 W S 68 W S 68 W	91.63	308.33 318.83

1-13-65 - 3172', making trip. Bit #17 (YS1) drilled 132'. Bit #18 (OSC1G) drilled 119' in 12 hours. Mud: weight 9.6#, viscosity 69, water loss 4, 2/32" cake, pH 9.8, 1/2% sand, 9% oil.

Depth	Drift	<u>Vert Depth</u>	Section	Direction	South	West
3026' 3085' 3146'	12-1/4° 11-1/4° 10-1/2°	2981.30 3039.17 3099.15	355.91 367.39 378.48	S 67 W S 69 W S 69 W	100.62 104.74 108.73	340.55 351.30

1-14-65 - 3334', on bottom with new bit (#20). Bit #19 (DT2G) drilled from 3172'-3334' (162') in 13-1/4 hours. Mud: weight 9.9#, viscosity 61, water loss 3.5, 2/32" cake, 1% sand, 5% oil.

<u>Depth</u>	Drift	Vert Depth	Section	Direction	South	West
3175' 3236' 3334'	10° 9° 7-1/4°	3127.71 3187.96 3285.18	383.51 393.03 405.33	S 70 W S 69 W S 67 W	110.45 113.87	366.42

1-15-65 - Depth 3404'. Awaiting parts to repair burned out clutch on pump.

<u>Depth Drift Vert Depth Section Direction South West</u>

3404' 6-1/2° 3354.73 413.15 S 64 W 122.17 393.84

1-18-65 - Depth 3692'. Lost 75 barrels mud at 3690'-3692'. Mud: weight 9.9#, viscosity 80, water loss 3, 2/32" cake, pH 10.5, 1-1/2% sand, 4% oil. Bit #24 (WT18) made 59' in 8-1/4 hours (3593'-3652'). Bit #25 (OSC1G) made 40' in 6 hours (3652'-3692').

 Depth
 Drift
 Direction
 South
 West

 3646'
 5-1/2°
 S 65 W
 132.86'
 415.65'

 3692'
 5°
 S 72 W
 134.10'
 419.46'

1-19-65 - Depth 3692'. Ran I.E.S. and Sonic-Caliper logs. Conditioned hole.
Ran Halliburton DM squeeze packer on 2-7/8", 6.5#, N-80, EUE tubing and set at 3399'. Pumped in 25 barrels of mud. Break down pressure 700#, pumping pressure 400#.

- 1-20-65 Rig on standby with two man crew. All pits full of mud.
- 1-21 thru
- 2-11-65 Rig standing by.
- 2-12-65 Pumped in 10 barrels of mud to determine if formation is still taking fluid. Break down pressure 1000#, average pumping pressure 500#.
- 2-15-65 Plugged well as follows:
  - 15 sacks pumped below bridge plug at 3400'
  - 5 sacks regular on top of bridge plug
  - 35 sacks regular with 5 sacks sand at 1385'-1500'
  - 35 sacks regular from 586'-486', 1/2 in surface and 1/2 below surface pipe

Presently stripping cellar. Will release Barker rig and install surface marker when cellar is stripped.

2-16-65 - Placed 5 sack cement plug at surface and installed dry hole marker.

Rig released at 2:00 p.m. 2-15-65. Well has been abandoned in such a condition so as to allow for re-entry and re-drilling to Uinta gas sand. FINAL REPORT

## VERTICAL TESTS HORSESHOE BEND NO. 13-2-2

<u>Depth</u>				Degree Deviation
120'				
172'				0
232'				1/2
2921				1/4
381'				1
831'				3/4
962'				3/4
				1/2
1082'				1/2
1202'				1/4 N 63 W
1321'		1,		1/2 N 35 E
1400'				3/4 N 79 E
1411'				1-3/4
1440'				2-3/4 s 39 W
1472'	•			4-1/2 S 45 W
1532'	•			5-1/4 S 42 W
1665'				9-3/4 s 70 w
1694'				10-3/4 s 72 w
1725 <b>'</b>				11 S 75 W
1784 <b>'</b>				11-1/2 S 76 W
1813'				11-3/4 s 75 W
1873 <b>'</b>				12-1/4 S 75 W
1934'				13 s 75 w
1994'				13-3/4 S 77 W
2132'				14-1/2 S 80 W
2190'				15-1/4 S 80 W
2250'				15-1/4 S 82 W
2308'				15-1/4 s 83 W
2338'				15-1/2 S 83 W
2409'				15-3/4 S 83 W
2439 <b>'</b>				15-3/4 S 84 W
2469 <b>'</b>				16 S 85 W
2481'				15 S 76 W
25021				15 S 73 W
2538				14-3/4 S 70 W
25621				15 S 68 W
2637'				16 S 68 W
2736'				
2761'				
2810'				16 S 67 W
2873 <b>'</b>				15-3/4 S 67 W
2919'				15 S 68 W
2967'				14-1/4 S 68 W
3026'				13-1/4 S 68 W
3085 <b>'</b>				12-1/4 S 67 W
3146'				11-1/4 S 69 W
3175 <b>'</b>				10-1/2 S 69 W
3236'				10 S 70 W
3334 <b>'</b>				9 S 69 W
3404 <b>'</b>				7-1/4 S 67 W
7404				6-1/2 s 64 W

Depth 3646' 3692' Degree Deviation

5-1/2 S 65 W 5 S 72 W

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G NO.	CONTRA	CTOR	<u>t</u>		MersEsM	<u> </u>	( <i>لارتي</i> ز (2) X	LOCATION		KELIEF	Hole	+	5PUD		US	INTE	/ <i>Y</i> / <del>/</del>	TOTAL	DEPTH	- 1	TOOL F	USHER			
7	<u> L</u>	BARK	ER U	UELL.	SFRYICE 3% IN		0.0//	Hersester	C BEND	130	2-1	$\perp$	12-22 > -12			ORKS & PO	OWER	J -	18.6	.5	WATER	11'	11/1	NO. OF DUI	LS
TOOL	1	SIZE &	L TYPE	2.	3/2/		0.D.	DRILL COLLARS		PUMPS	2. FX	7	- /()		MATIC ELD				ERATOR		PATE	06	mi	PURCHASE	_
8	ALESMAN			DIVISION			•	STOCKPOINT NO.	DO NOT USE		STAT	£	ZONE		ELD	CONT	RACTOR	Joh	ERAIOR		DATE			r o ken kozi	
DO NO	YPE	NO.	SIZE	MAKE	TYPE	22 32 23 32	JET 2nd IN.	SERIAL	DEPTH OUT	FEET	HOURS	WT. 1000 LBS.	RPM	VERT. DEV.	PUMP PRESS.	NO. 1 SPM LIN	NO.	-	MUE T. VIS.	T	1 1	COND.	DULLS	FORMATION CALL DATES REMARKS	<u></u>
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Form \$-330 (Rev. 5-63)

## UNITED STATES DEPARTMENT OF THE INTERIOR GEOLOGICAL SURVEY

SUBMIT IN DUPLICATION

otner in-					
ctions on rse side)	5. LEA	SE DESIGNATION	AND	SERIAL	NO.

1	(	ML-1541								
WFIL CO	MPLETION		LOTTEE OR TRIBE NAME							
1a. TYPE OF WE		- Not Applicable 7. UNIT AGREEMENT NAME								
b. TYPE OF COM		L GAS WELL	Di	RY 📖	Other R			No		
NEW X	WORK DEE	S. FARM OR LEA	SE NAME							
2. NAME OF OPERA		Horse	shoe Bend							
P	acific Natu	ral Gas Exp	1orat	ion C	ompany_		_	9. WELL NO.	2	
3. ADDRESS OF OPE	ERATOR						13-2	POOD, OR WILDCAT		
P. O.	Box 2436,		-							
	2267' FSL an		or wance	with an	y State regul	ii emenes j			11 - Wildcat H., OR BLOCK AND SURVEY	
At top prod. in	Sec 2 T 7S	Range 21E,	SLB-	ntah Co	unty, l	Jtah	OR AREA			
	-					1 1				
At total depth		,	14. PERMIT NO. DATE ISSUED				ED	Sec 2, T 7S, R 21E 12. COUNTY OR   13. STATE		
;				THE PERMIT NO.				PARISH		
15. DATE SPUDDED	16. DATE T.D. R	EACHED   17. DATE	COMPL.	(Ready to	prod.) 1	8. ELEVATION	ONS (DF, RKB,	Uintah RT, GR, ETC.)* 1	9. ELEV. CASINGHEAD	
12-22-64	1-18-6	5 P&	Δ 2-1	5-65			4.58' Gr			
20. TOTAL DEPTH, MD	& TVD 21. PLU	5 P & TO, MD & TO	D 22	. IF MUL HOW M	TIPLE COMPL		. INTERVALS DRILLED BY	ROTARY TOOLS	CABLE TOOLS	
36921		Surface		1017 14			<del>&gt;</del>	0-3692		
	ERVAL(S), OF THIS	COMPLETION-TOP,	воттом,	NAME (1	1D AND TVD)	*			25. WAS DIRECTIONAL SURVEY MADE	
				) ( ) () ()						
				ر يسعا	<u> </u>			1 97	Yes . was well cored	
26. TYPE ELECTRIC	and Sonic							21	. WAS WELL CORED	
<u>т. Е. З</u> 28.	and Source		G RECO	RD (Rep	ort all string	78 set in 106	ll)		er i bil Y	
CASING SIZE	WEIGHT, LB./	FT. DEPTH SET	(MD)	, но	LE SIZE		CEMENTING	RECORD	AMOUNT PULLED	
8-5/8" 32 536.8			2' KB 12-1/4" 315 sacks			sacks	regular	None		
<u>:</u>					5	_				
				1 -4 51 1 -4 51		-				
29.		LINER RECORD		11 + 1 + (2   5		30.		TUBING RECORI	1	
SIZE	TOP (MD)		ACKS CE	<del></del>	SCREEN ()	(D)	SIZE	DEPTH SET (MD)	PACKER SET (MD)	
:								a the tag		
				1 1						
31. PERFORATION RE	CORD (Interval, siz	ce and number)		11 3 7	32. ACID, SHOT, FRACTURE, CEMENT SQUEEZE, ETC.					
•		DEPTH INTERVAL (MD)			AMOUNT AND KIND OF MATERIAL USED					
i .										
£. 2. 4.										
33.*			·	PROI	OUCTION		!		· · · · · · · · · · · · · · · · · · ·	
DATE FIRST PRODUC	TION   PRODU	CTION METHOD (Flo	wing, g			and type	of pump)		TUS (Producing or	
1		en programme commence of the contract of	access with the					shut-in	,	
DATE OF TEST	HOURS TESTED	CHOKE SIZE		N. FOR PERIOD	OIL—BBL.	GA	s—MCF.	WATER—BBL.	GAS-OIL RATIO	
FLOW. TUBING PRESS.	CASING PRESSUE		OIL—I	BBL.	GAS-	-MCF.	WATER-	—BBL. OII	L GRAVITY-API (CORR.)	
		24-HOUR RATE					1			
34. DISPOSITION OF	GAS (Sold, used for	fuel, vented, etc.)						TEST WITNESSEL	) BY	
					:			1000000		
35. LIST OF ATTACE	HMENTS									
36. I hereby certify	y that the foregoin	g and attached info	rmation	is comp	lete and cor	rect as det	ermined from	all available reco	rds	
		1.00 an			٠.					
SIGNED _B.	H. Means	B.H. Man	Ťľ	rle	Comple:	tion Er	gineer	DATE _	3-16-65	

# INSTRUCTIONS

General: This form is designed for submitting a complete and correct well completion report and log on all types of lands and leases to either a Federal agency or a State agency or both, pursuant to applicable Federal and/or State laws and regulations. Any necessary special instructions concerning the use of this form and the number of copies to be submitted, particularly with regard to local, area, or regional procedures and practices, either are shown below or will be issued by, or may be obtained from, the local Federal and/or State office. See instructions on items 22 and 24, and 33, below regarding separate reports for separate completions.

If not filed prior to the time this summary record is submitted, copies of all currently available logs (drillers, geologists, sample and core analysis, all types electric, etc.), formation and pressure tests, and directional surveys, should be attached hereto, to the extent required by applicable Federal and/or State laws and regulations. All attachments

dd be listed on this form, see item 35.

Item 18: Indicate which elevation is used as reference (where not otherwise shown) for depth measurements given in other spaces on this form and in any attachments.

22 and 24: If this well is completed for separate production from more than one interval zone (multiple completion), so state in item 22, and in item 24 show the producing interval, or intervals, top(s), bottom(s) and name(s) (if any) for only the interval reported in item 33. Submit a separate report (page) on this form, adequately identified, or each additional interval to be separately produced, showing the additional data pertinent to such interval. or Federal office for specific instructions.

Consult local State

"Sacks Cement": Attached supplemental records for this well should show the details of any multiple stage cementing and the location of the cementing tool. Submit a separate completion report on this form for each interval to be separately produced. (See instruction for items 22 and 24 above.) Item 29: " Item 33: S

		TRUE VERT. DEPTH		<i>y. I</i>
GEOLOGIC MARKERS	TOP	MEAS. DEPTH 7	n de la composition della comp	
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DEFTH INTERVAL TESTED, CUSHION USED, TIME TOOL OPEN, FLOWING AND SHUT-IN PRESSURES, AND RECOVERIES	DESCRIPTION, CONTENTS, ETC.		No cores or tests taken, no geologic tops picked. This well drilled as mechanical means of controlling blowout in No. 13-2-1 well.	
USED, TIME TOOL	BOTTOM			
TESTED, CUSHION	TOP			
DEPTH INTERVAL	FORMATION			